Report of Professional Wet Cleaning in Europe

Kaspar D. Hasenclever

Kreussler Chemical Manufacturing Company, Weisbaden, Germany

Mr. Hasenclever is Managing Director of Kreussler, a chemical manufacturing company in Germany. He is chairman of the scientific advisory board of the Laundry Research Institute, Krefeld and member of the DIN Committee of Standardization. Mr. Hasenclever works in research and development of detergents and textile chemicals as well as in process technology for laundry and dry cleaning. Mr. Hasenclever has a Diploma in Engineering in Textile Chemistry from the Textile Engineering School at Krefeld, Germany.

When dry cleaning was discovered some 120 years ago, neither manmade fibers nor dimensionally stabilizing finishing processes were available. Dye fastness was poor, sewing techniques and garment construction gave little consideration to aftercare, and fashion was not anywhere near as user-oriented as today. This is not to mention the then-current laundry equipment technology, processes, and the standard detergent—soap.

For a great proportion of textiles in general use, washing would spell complete ruin. The discovery of dry cleaning thus meant progress and provided an answer to textile care problems. With the application of modern technology, today's textile items are closely oriented to serviceability. Choice of material, design, cut, dyes, wear-comfort, and aftercare methods all meet the needs of the user. Textile retailers and manufacturers research such aspects very thoroughly, in order to offer attractive incentives for purchase of new textile items. Simple problem-free care possibilities are an important consideration.

The selling point of "easy-care" calls for textiles to be cleanable with normal domestic methods. This is the reason why only a minority of outerwear textiles today are not washable. This proportion too, is continuously getting smaller since trends are towards the natural looking fabrics, ecological labeling, and protection of the environment.

With most garments, the textile care industry is in competition with domestic alternatives and has to rival its quality features, efficiency, acceptance, and availability. During the past 10 years, the textile care industry has constantly decreased its share of the outerwear market. The new wet cleaning technology offers the industry an opportunity to regain its ability to compete in the areas of quality, material conformity, efficiency, and acceptability. Looked at in this way, the use of wet cleaning in textile care is of vital importance for future development in this sector.

Soiling

In central Europe, outerwear is mostly soiled by air pollution, body excretions, foodstuffs, and direct dirt contact. Slide 1 provides data about approximate distribution of quantities, components and solubility.

Slide 1

Slide 1 shows that only about 10 percent of soiling on outerwear is soluble only in solvents. Some 40 percent is water-soluble, and the greater proportion consists of pigments. Thus it already becomes clear how advantageous a combination of water and surfactants is for removal of soiling from textiles and how much more demanding are the conditions for using solvents. In order to remove water-soluble straining during cleaning with solvents, the addition of water as well as detergent is necessary. At the same time that these water additions are active in cleaning, they also cause natural fibers to swell and so increase risk of shrinkage.

Slide 2

Slide 2 shows the absorption of moisture by fabrics depending on the relative humidity as well as the swelling produced as the maximal cross-section increases.

The most interesting aspect is the difference in water content of the fibers between that at 90 percent relative

humidity and the maximum value. It is here that the fundamental difference lies between wet cleaning and use of solvents, at least when "water-based soiling" (meaning soiling from body excretions, food, drink etc.) has to be removed with solvents.

Water absorption by textiles in solvents is directly proportional to the relative humidity in the air space of a dry cleaning machine. Immediately after one employs water additions of as little as 1 percent to 1.5 percent of the weight of work, this results in relative humidity of 85-90 percent which then leads to corresponding fiber swelling. This is to say that fiber swelling occurs even with the use of solvents. At 90 percent relative humidity, it is only a little below the maximum swelling for viscose, silk, cotton, and acetate.

Wet Cleaning as a New Processing Technique

In December 1991, during a trade press conference at Kreussler in Wiesbaden, the **LANADOL process** based on Kreussler patents was introduced jointly by Miele and Kreussler.

In November 1993, this new technology was honored with an award for innovation by the Hesse Minister of Economies, Technology, and Transport. Based on the experience of more than 500 users of wet cleaning machines, one can make the following comparisons with solvent processes:

- Better cleaning effects.
- Clearer colors.
- Fresher smell for cleaned work.
- Lower costs.
- Enhanced service capability.
- Unanimous acceptance by customers.
- Greater risks with "non-washables."
- Increased finishing requirements for multi-layer garments.
- Longer completion time.

The majority of companies where wet cleaning machines are installed also operate solvent cleaning in parallel. During the summertime approximately 50-70 percent of garments can be wetcleaned without risks. During winter, that rate drops to 30-50 percent. The other articles—mainly suits and costumes—will be processed using solvent. The advantages of wet cleaning include lower investment and processing expenditure, better cleaning quality, and higher customer satisfaction.

Approximately a third of the 500 plants using wet cleaning, use the process exclusively to handle those articles which present problems when treated in solvent: microporous membrane fabrics, sports and rain-protective clothing, very heavily soiled articles, or special classifications. Although such items comprise only some 30 percent of the total intake, this option saves about 50 percent of the solvent, because the portion of the workload which is being wetcleaned is that which would otherwise be responsible for particularly high solvent loss.

Of those cleaners using wet cleaning, only a minority are working exclusively with these process and thus no longer use solvents. In some cases, occasional items considered risky will be drycleaned by a co-operative companies, but most of the time the cleaners can cope on their own. Most of the cleaners working in this way report reduced costs and increasing demand.

Slide 3

This gives an impression, about the proportion of wet cleaning, which is already realized at European textile cleaners. But the possibility of wet cleaning is much more. Slide 4 shows the kind of garments people normally wear or use. The slide shows the preference of the best cleaning method—wet cleaning or dry cleaning.

Slide 4

The result: most of the garments of the day-by-day use are better wetcleaned than drycleaned.

Primary Needs

Textile cleaning is necessary in terms of hygiene and attractiveness, but is irksome because of the effort and expenditure involved. The primary needs are cleanliness, shape, and finish. With easy-care textiles, cleanliness can to a large extent be achieved in the household without difficulties. Shaping and finishing are sometimes very laborious. It is here that the usefulness of professional cleaning becomes evident. Conventional professional cleaning processes using solvents have system-related advantages as far as shape and finish are concerned but disadvantages with cleanliness and hygiene aspects.

This gap is closed by wet cleaning. In cleanliness and hygiene, it is equal to the high standard of house-

hold care, while for shape and finish it offers all the advantages of professional cleaning to the customer.

Service Range Profile in Textile Cleaning

Compared with easy-care processes in domestic washing machines, wet cleaning offers considerable advantages. The mechanical stress is clearly less. In addition to comprehensive cleaning efficiency, the chemicals which are used provide considerable fiber protection, color stabilization, and retexturing, and give an anti-electrostatic finish. With appropriate electronic control of dryers, the maintenance of form and shape in easy-care textiles is ensured so that finishing effort is lower, even in comparison with a solvent process.

For this category of easy-care textiles, wet cleaning offers considerable qualitative advantages compared with domestic care; costs are also clearly lower compared to conventional solvent processing.

Wet Cleaning therefore provides an opportunity to widen the range of services for the textile care trade. This would involve introducing a special service of easy-care articles, in addition to the established cleaning of high-value garments which are not washable and thus justify the appropriate expenditure and costs. Only in this way could a clearly lower price level be achieved that would be attractive to customers on a cost basis.

Opportunities for Wet Cleaning

Anyone who raises the question of what proportion of garments handed in for cleaning can be processed with wet cleaning and what proportion must be cleaned in solvent, has not fully understood either the challenge to the cleaning industry's future or the opportunities of wet cleaning. As a new processing method, wet cleaning must be viewed as dynamic, not static. It offers an extension to professional dry cleaning's capacity.

A wet cleaning installation provides the capability for a complete processing spectrum ranging from silk articles, knitted wool garments, practically all trousers and skirts, all easy-care articles, jeans, household textiles, bed linen, pillows, shirts, towels, and table linen.

Wet cleaning therefore broadens the profile of services from pure dry cleaning of conventional outerwear to the comprehensive handling of all cleaning requirements for private households. This brings new customer contacts. This in turn leads to greater volume. It takes the cleaner out of a narrow niche into becoming a general provider of services for customers' textile needs. It should furthermore be taken into consideration that competitively priced processing of easy-care textiles will also inevitably lead to increased turnover in conventional dry cleaning work.

Why not offer a special service for easy-care goods with new approaches and precisely tailored pieces, to entice people who are using their household washing machines to return once more to the trade. If such customers find satisfaction they will come back and bring their conventional clothing—in addition—for cleaning.

Such consistent use of wet cleaning demands completely new thinking from the dry cleaner, however. It is thus quite possible to break up present structures and win new customers. We must be aware, however, that these "new" customers also need new reasons to have their cleaning done. In addition to gains in quality of life and free time, arguments can be based on care for the environment and on textiles retaining their value. In practical terms, professional wet cleaning is more effective than home processing, while offering a guarantee of safety and efficiency through specialist processing techniques and trained operators.

From this standpoint, wet cleaning is also an entrepreneurial challenge. Even without an appropriate care symbol for wet cleaning an absolute imperative we must not forget that commercial textile cleaning offers advantages, even for easy-care textiles. Why should we not take up this market actively?

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Table 1
Average soiling of garments in Europe

Soil type	Proportion	Solubility	Components
Pigments	50 %	not	dust, soot, metaloxides, rub-off, pollen, aerosols
Polar subst.	30 %	water	sugar, salt, drinks, body excretions
Polymers	10 %	water	starch, albumen, milk, food
Oils/Fats	10 %	solvents	skin grease, resin, wax, oils, fats

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Table 2
Water content in Textile fabrics dependent on relative humidity

Fibre	relative humidity			swelling
	70%	90%	max.	
viscose	14,1%	23,5%	24,8%	115%
wool	15,6%	22,2%	28,7%	39%
silk	11,2%	16,2%	17,7%	31%
cotton	8,1%	11,8%	12,9%	43%
acetate	5,4%	8,5%	9,3%	62%
polyamide	5,1%	7,5%	8,5%	11%
acrylic	2,1%	4,0%	4,8%	9%
polyester	0,5%	0,6%	0,7%	0%

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Table 3
Proportion of Wet Cleaning in European Textile Care

Proportion	kind of garments	Users
20 - 30%	"washable" textiles	50%
35 - 50%	easy finishing	35%
70 - 80%	no high risks	15%

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Table 4
Preference of Cleaning Method dependent on Kind of Garments

better for dry cleaning	SUITS WOOLEN JACKETS COSTUMES WOOLEN COATS
equal dry/wet clean	TROUSERS SKIRTS DRESSES PULLOVERS COATS
better for wet cleaning	RAINCOATS ANORAKS SPORTSWEAR JACKETS BLOUSES JEANS
new business	SHIRTS TABLE LINEN BED LINEN DUVETS PILLOWS